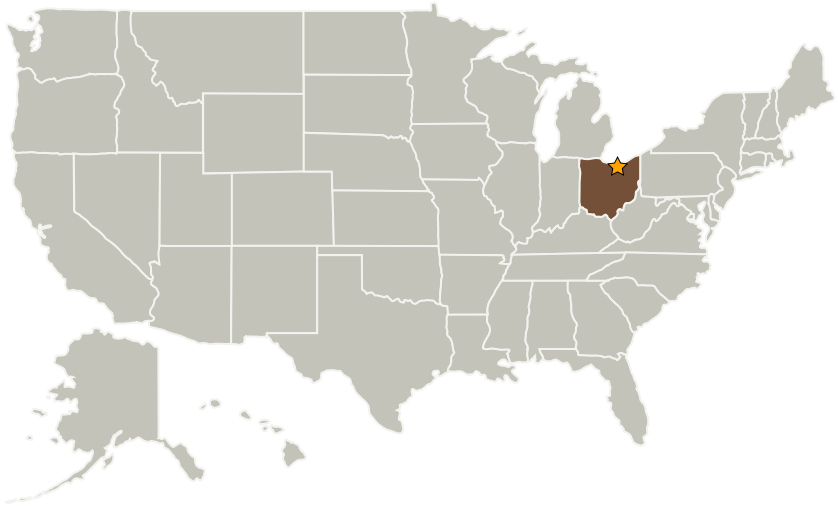
Mini-Treadmill for Musculoskeletal Health, Phase I

Completed Technology Project (2007 - 2007)

Project Introduction

ZIN Technologies, Inc. proposes a novel Miniature Treadmill with resistive exercise capability for use in spaceflight exercise countermeasures and broad terrestrial therapeutic applications. The treadmill device we propose will offer excellent periodic impact exercise to stimulate bone remodeling and cardiovascular activity as well as an added component of resistive exercise to encourage all-body muscle maintenance. The goal of this project is to demonstrate by design and analysis that the proposed treadmill will satisfy the stringent volumetric, power, and performance requirements demanded by lunar missions and provide the active feedback necessary to control the treadmill and display Daily Load Stimulus (DLS). We along with our partner the Cleveland Clinic believe that a hybrid compact exercise device along with the direct feedback of DLS is a unique and new approach that will provide a superior in space exercise system than ones currently in use on ISS. This project will culminate at the Preliminary Design Review (PDR) level having requirements defined and performance verified through analysis and technology demonstration on existing facilities. The technical aspects of the work can be divided into three key areas: Dual Track Treadmill Technology, Resistive Subject Loading Device, and Active Feedback Bio-Instrumentation.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
ZIN Technologies Inc.	Supporting Organization	Industry Small Disadvantaged Business (SDB)	Middleburg Hts, Ohio

Primary U.S. Work Locations
Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - └ TX12.5 Structural Dynamics
    - └ TX12.5.3 Shock & Impact